REPLY

To: Examiner of the Patent Office

1. Identification of the International Application

PCT/JP2004/004790

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5.   **CONTENT OF REPLY**

(1)   The written opinion of the International Searching Authority mailed 2004 July 20 states that the inventions of Claims 1, 2, 3, 5, 6, and 8 of this application are considered obvious over Patent Document 1 (JP 2000-90272 A) and Patent Document 2 (JP 2001-104005 A).

Also the inventions of Claims 4 and 7 of this application are considered obvious over Patent Document 3 (JP 2002-172104 A) in addition to Patent Documents 1 and 2.

Applicant respectfully requests reconsideration and withdrawal of the above objections since applicant submits that the aforesaid inventions still involve inventive steps despite the fact that Patent Documents 1-3 exist as publicly known documents.

In addition, applicant has now filed, on even date herewith, a so-called "section 34 amendment" under §34(2)(b) of the Patent Cooperation Treaty for the addition of Claims 9-12.

Based on the above amended claims, applicant responds to the written opinion of the International Searching Authority as follows:

(2)   INVENTIONS OF PRESENT APPLICATION

Claims 1, 2, 5, and 8 of the present application are all independent claims. These claimed inventions are characterized in that the angle of inclination of a human foot is obtained from a two-dimensional cross section of the foot obtained based on three-dimensional data on the measured shape of the human foot.   This arrangement makes it possible to objectively obtain the angle of inclination of a human foot.   Besides, it becomes possible to obtain the angle of inclination of a human foot with high reproducibility, without requiring skill.

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On the other hand, Claims 3, 4, 6, and 7 of the present application are represented as dependent claims of Claims 1, 2, and 5.

In addition, Claims 9-12 of the present application are also represented as dependent claims of Claims 1, 2, 5, and 8. These claimed inventions (Claims 9-12) are characterized in that a two-dimensional cross section of a human foot in a position ahead of a rearmost end of the human foot by a distance of not less than 4% nor more than 11% of the length of the human foot is obtained based on the three-dimensional shape data. This makes it possible to measure the angle of inclination of the foot with higher accuracy. The reason for selecting a position ahead of a rearmost end of a foot by a distance of not less than 4% nor more than 11% of the length of the human foot is that the position is situated in the vicinity of the Achilles tendon. Subcutaneous fat around the Achilles tendon is thin, so that if a two-dimensional cross section taken in the vicinity of the Achilles tendon is employed, this makes it possible to more accurately obtain the angle of inclination of the foot, being free of influences caused by the subcutaneous fat.

(3)   INVENTIONS OF PATENT DOCUMENTS

1)   INVENTION OF PATENT DOCUMENT 1

Patent Document 1 discloses a technique of obtaining three-dimensional shape data on the shape of a foot and then converting the obtained three-dimensional shape data into a two-dimensional shape. Figure 9(c) shows a two-dimensional shape of a heel portion. However, the two-dimensional shape is one that is obtained by projection of a three-dimensional shape from a specific direction (for example, from the front). That is, the two-dimensional shape is not a shape of a specific cross section in the three-dimensional shape.

Specifically, in Claim 1 of Patent Document 1, it is described that

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"two-dimensional shape data obtained by separate projection of a toe portion, a central portion, and a heel portion from three directions are formed from the measured three-dimensional data".   Also in Paragraph [0005] of Patent Document 1, it is described that "two-dimensional shape data obtained by separate projection of a toe portion, a central portion, and a heel portion from three directions are formed from the measured three-dimensional data".   Furthermore, in Paragraph [0011] of Patent Document 1, it is described that "for each of the portions, as shown in Figure 9, the three-dimensional data is converted into a two-dimensional shape by projection from three different directions (i.e., from the front, the side, and the top).

As can be seen from the above, Patent Document 1 discloses a technique of forming two-dimensional shape data by projection of three-dimensional shape data on the shape of a foot in a specific direction.

2)   INVENTION OF PATENT DOCUMENT 2

In Patent Document 2, it is described that the angle of inclination is the degree of inclination of the calcaneal bone when viewed from the rear of the heel, and that it is possible to learn the degree of foot varus and the degree of foot valgus by measurement of the angle of inclination of the calcaneal bone.

3)   INVENTION OF PATENT DOCUMENT 3

Patent Document 3 shows a technique of indicating an angle formed between the first toe and the central angle of the foot.

(4)   COMPARISON OF PRESENT APPLICATION AGAINST PATENT DOCUMENTS 1-3

1)   FOR INVENTIONS OF CLAIMS 1, 2, 5, 8 OF PRESENT APPLICATION

As has been described above, Patent Document 1 discloses a technique of

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forming two-dimensional shape data by projection of three-dimensional shape data on the shape of a foot in a specific direction.

However, such a two-dimensional shape obtained by projection is merely a foot shape visible by eyes. Therefore, measurement of the angle of inclination based on a two-dimensional shape obtained by projection achieves much the same results as measurement by eyes. Stated another way, if the inclination of angle is found based on a two-dimensional shape obtained by projection, this means that measurements are made from the shape of for example a fore portion of the foot portion and the largest shape of a foot including soft tissues of portions of no concern to the heel and influences caused by deformation thereof, and it is impossible to obtain the angle of inclination of the heel with high accuracy. Accordingly, objective measurement of the angle of inclination of a foot cannot be expected, let alone high reproducibility and accuracy of the measured values.

For the above, in the inventions as set forth in Claims 1, 2, 5, and 8 of the present application, a two-dimensional cross section is obtained based on the three-dimensional foot shape data. The two-dimensional cross section is invisible. Besides, the two-dimensional cross section is not a projected shape of the three-dimensional shape data.

By making utilization of a two-dimensional cross section of a heel portion, it becomes possible to objectively accurately measure the angle of inclination of a foot with high reproducibility.

None of Patent Documents 1-3 disclose (teach) a technique of obtaining a two-dimensional cross section based on the three-dimensional foot shape data and measuring the angle of inclination of the foot by making use of the obtained two-dimensional cross section.

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Even if the projected shape data of Patent Document 1 is measured by means of the measuring method of Patent Document 2, this will not provide the same effects as the inventions of Claims 1, 2, 5, and 8.

2)   CLAIMS 3, 4, 6, 7 OF PRESENT APPLICATION

Claims 3, 4, 6, and 7 of the present application are independent claims of Claims 1, 2, and 5.   Therefore, the inventions of Claims 3, 4, 6, and 7 provide the same effects as Claims 1, 2, and 5.

3)   FOR INVENTIONS OF CLAIMS 9-12 OF PRESENT APPLICATION

As has been stated above, the inventions of Claims 9-12 of this application is characterized in that a two-dimensional cross section of a foot in a position ahead of a rearmost end of the foot by a distance of not less than 4% nor more than 11% of the length of the foot is obtained based on the three-dimensional shape data.   Such arrangement makes it possible to obtain a two-dimensional cross section in the vicinity of the Achilles tendon where subcutaneous fat is present in less quantities and, in addition, the angle of inclination of the foot is measured more accurately, as noted above.

None of Patent Documents 1-3 disclose (teach) a technique of obtaining a two-dimensional cross section of a foot in a position ahead of a rearmost end of the foot by a distance of not less than 4% nor more than 11% of the length of the foot.

Even if the projected shape data of Patent Document 1 is measured by means of the measuring method of Patent Document 2, this will not provide the effects as the inventions of Claims 9-12.

(5)   CONCLUSION

For all of the above reasons, applicant submits that the unobviousness of the inventions of Claims 1-12 of this application should not be rejected based on

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the existence of Patent Documents 1-3.   Applicant respectfully requests that the

unobviousness of the inventions of Claims 1-12 of this application be accepted.